

**BUREAU OF HIGHWAYS
REQUEST FOR PROPOSAL
for
QUALIFICATIONS BASED SELECTION FOR PREQUALIFIED SERVICES**

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is currently prequalified for this type of work and you are interested in providing services, please indicate your interest by submitting a Proposal. The Proposal must be submitted in accordance with the latest "Vendor Selection Guidelines for Service Contracts", available on the MDOT website.

For efficiency sake, we are asking that the vendor firm provide [4] paper copies of the Proposal to the MDOT project manager named in the attached scope of services.

These copies must be received by **noon (12:00 p.m.) Wednesday, February 16.** Fax and electronic copies are not acceptable.

In addition, provide one unbound copy to:

Regular Mail:

Secretary, Operations Contract Support
Michigan Department of Transportation
P.O. Box 30050
Lansing, MI 48909

OR

Overnight Mail:

Secretary, Operations Contract Support
Michigan Department of Transportation
425 W. Ottawa
Lansing, MI 48933

This copy is to be received within three working days after the due date and time specified above. Please do not deliver in person.

Any questions relative to the scope of services must be submitted by e-mail to the MDOT project manager. Any questions must be asked at least three working days prior to the due date and time specified above. All questions and their answers will be placed on the MDOT website as soon as possible after receipt of the questions. The names of vendors submitting questions will not be disclosed.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

The selection team will review the information submitted and will select the firm considered most qualified to perform the engineering services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

The maximum allowable pages for your proposal shall follow the guidelines detailed in Exhibit F of the Vendor Selection Guidelines (October 2004) for \$100,000/\$500,000.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

The scope of services is attached to this solicitation.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS

SCOPE OF SERVICES for DEVELOPING BRIDGE REPAIR ALTERNATIVES

2009 BRIDGE CALL FOR PROJECTS CS 63041, 63043, 63102, 63172, 63174, 77023, 77024 & 77111 – JN 83124

Primary Prequalification Classification: **Bridge Project Scoping**

DBE Requirement: **None**

METRO REGION

The Project Development Section of the Metro Region, Michigan Department of Transportation (MDOT) is seeking a proposal from a "Pre-Qualified" Consulting Firm (CONSULTANT) to evaluate various repair alternatives for a prescribed set of bridges and recommend the most appropriate rehabilitation or treatment based on current conditions, remaining structure life and sound engineering judgment. This process is termed Bridge Project Scoping.

MDOT Project Manager (MDOT PM): Eric Mueller
Metro Region Bridge Program Engineer
18101 W. Nine Mile Road
Southfield, Michigan 48075
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Fax: (248) 569-3103
E-mail: muellere@michigan.gov

I. LOCATION

The bridges are situated in various locations within the Metro Region. For this project, see the **WORK PACKAGE LISTING AND LOCATION MAP** in the Appendix for specific bridge numbers and locations.

II. PURPOSE

Each year a number of bridges are selected for repairs based on many factors. Each of these bridges must have a detailed scope of work and an estimate developed prior to submitting for approval and design. The purpose of this project is to develop this scope of work and estimate for each bridge in the Work Package.

The deliverables for this authorization will be the Scoping Reports for each bridge. The information contained in the Scoping Reports will be used by the Bridge Design Support Area to prepare rehabilitation plans. Therefore, in general terms, the content of the reports will need to be sufficient to adequately convey the general physical condition of each structure and the specific areas in need of repair. Current design standards and minimum requirement criteria must be taken into account when recommending repairs.

III. DURATION AND SCHEDULE

The duration of the project has been established using an average time per bridge determined from previous experience. If the CONSULTANT cannot meet these deadlines, the reason for the required extra time must be detailed in the priced proposal.

A. PROJECT DATES

Following is a schedule of dates for this project:

1. Priced Proposal Submission: **March 18, 2005**
2. Anticipated NTP: **April 11, 2005**
3. Project Initiation Meeting: **April 18, 2005**
4. Draft Report Submission: **July 15, 2005**
5. Final Report Submission: **September 2, 2005**

B. PROJECT SCHEDULE

By submittal of priced proposal, the CONSULTANT is verifying that they can meet schedule identified in this scope of work. The priced proposal must include a bridge by bridge schedule showing the required milestones. The CONSULTANT must notify the MDOT PM 48 hours prior to the site review date of any changes to this schedule.

C. MEETINGS

1. Project Initiation Meeting

A mandatory Project Kick-off Meeting will be held with the CONSULTANT prior to the start of the site review work. The CONSULTANT PM will be required to attend the meeting and it will be held at MDOT's Region Office unless an alternative site is mutually agreed to. The CONSULTANT will be responsible for documentation and distribution of all meeting minutes.

2. Sample Report Review and Progress meeting

The MDOT PM will decide if a Sample Report Review and Progress Meeting will be held with the CONSULTANT at the Region Office during the report preparation period, prior to the draft report submittal. Typically this is done if this is the first Bridge Scoping project the CONSULTANT has done for the Metro Region, or if the MDOT PM has no prior experience with the CONSULTANT. The MDOT PM and the CONSULTANT PM (report author) will be required to attend. A sample draft report (for one bridge) must be

presented to the MDOT PM at the meeting. This report will be used to compare against the requirements of the Scope of Services. Questions on the report preparation may be asked at this time as well. The CONSULTANT is encouraged to ask questions throughout the duration of the project. A separate meeting with the Michigan Intelligent Transportation Center (MITSC) Development Engineer may be required to determine if there are any Intelligent Transportation Systems (ITS) components in or on the bridge, or in the immediate vicinity of the bridge.

IV. STAFF QUALIFICATION REQUIREMENTS

Staff qualifications must be submitted in accordance with “Guidelines for the Preparation and Submittal of Letters of Interest”. The Priced Proposal Letter submitted by the CONSULTANT must identify staff assigned to the project and their respective roles. A resume for each of these individuals must also be included with the Priced Proposal Letter. The Consultant must designate the following staff:

A. PROJECT MANAGER

The CONSULTANT must assign a Registered Professional Engineer (licensed in Michigan) as project manager, referred to herein as the CONSULTANT PM. This person must have five years experience in the design for rehabilitation of bridges in Michigan.

A Registered Professional Engineer (licensed in Michigan) is required to be present at the site reviews. The CONSULTANT PM must attend all meetings and write the reports. This person will be the prime contact with the MDOT PM. If this person is unable to complete the project, the authorization will be terminated at that point and the CONSULTANT will be paid only for the work completed to that date. The CONSULTANT PM shall not change during the project unless agreed upon by the MDOT PM. Should this occur, the qualifications of the new CONSULTANT PM shall be reviewed by the MDOT PM for approval.

B. LEAD QA/QC

The CONSULTANT must assign a Registered Professional Engineer (licensed in Michigan) as lead QA/QC independent of the CONSULTANT PM to review all aspects of the project documents. The person performing the quality control review must have extensive experience with MDOT standards and practices. The CONSULTANT PM cannot be the lead QA/QC.

C. ADDITIONAL STAFF

The CONSULTANT must assign additional staff necessary to complete the work in the required time frame. The qualifications and experience of these individuals must be suitable for the assigned tasks.

V. GENERAL DESCRIPTION OF THE WORK

The work for each bridge in this authorization is broken down into three main components: A) Site Review B) Engineering Analysis of Findings and, C) Report Preparation.

A. SITE REVIEW

1. General

Each bridge and environs must be visited by the CONSULTANT PM. The purpose of this visit is to locate all areas of deterioration, determine feasible repair options, and to ascertain quantities. Where necessary, high-reach equipment or an under bridge inspection crane must be used to get close enough to evaluate the structural components (See Section VIII-B, **EQUIPMENT AND SAFETY**, below).

The information collected in the field must be sufficient to determine quantities and locations of repairs and improvements. This information must be detailed in the field notes and/or sketches and are to be included in the report.

- a. During the site review of the bridge, the following will be done, at a minimum:

- (1) Sound all concrete elements (deck, superstructure, substructure, etc.) for delaminations and unsound areas. All delaminated areas are to be marked with chalk, crayon, or kiel, that will be evident in the photographs. Paint may be used on deck surface with MDOT PM approval. The use of paint on substructure units is prohibited. All delamination surveys are part of the site review work (not part of testing). Sketches of the deck and substructure units mapping the areas of delamination and cracking are to be included in the appendix of the scoping report. Percent of total surface area delaminations shall be calculated and shown on the sketches.

The underside of the deck must be visually inspected for wet areas, efflorescence, transverse cracking, longitudinal cracking, map cracking, delaminations, spalling, rust along beam edges, or any other evidence of deterioration. The type of cracking and severity must be described in detail in the report. Note areas of previous repairs, or where false decking is in place. Pictures of the area must be taken and a written description of the deterioration and location must be documented for inclusion into the report.

- Visually inspect all substructure units for signs of settlement, lateral movement, cracking, spalling, exposed reinforcement and material defects. Note the condition of the backwalls, and check the bridge seat for undermining at bearing locations. For pier caps, check for flexural cracks and shear cracks.
- (2) Note the type and condition of the bridge railing. Does the railing meet current standards? Is a thrie beam retrofit necessary, or a railing replacement? If pedestrian fencing is present, note its condition. Guardrail on the approaches should also be evaluated. Note the condition of brush blocks, raised shoulders and sidewalks, and how these elements transition from the approaches.
- (3) For reinforced concrete and prestressed concrete superstructures, visually inspect for shear or flexure cracking, exposed or broken prestressing strands, crushing of beam end in bearing areas, discoloration of concrete caused by corroding mild reinforcement or prestressing strands, high load hit damage and signs of previous repairs. Observe live loads crossing structure and note excessive deflections or working cracks. Inspect the concrete diaphragms for spalling or diagonal cracking from structure movement or excessive deflection, and any other concrete defects. Note the use of temporary supports, or if they may be needed for the structure to remain in service until proposed rehabilitation.
- (4) For steel beam superstructures visually inspect for areas of section loss, heavily rusted areas or any web buckling due to excessive section loss. Note any areas that are prone to trapping drainage or debris. Note the condition of the paint system. Thickness readings shall be taken at each beam end using an ultra-sonic thickness gage. Preparation shall include removing all dirt, debris, and rust scale from the ends of each of the steel beams under the joints so that the steel can be inspected for section loss. Thickness readings on the web and the bottom flange are to be taken at the thinnest locations within 12 inches of the end of the beam.

These thickness readings will be compared with the original thickness and the percentages of section loss will be calculated. This data will be tabulated in a specific format (as shown in Attachment No. 2, Steel beam section loss detail sheets) and sketches will be prepared of major components, showing the location of the

deteriorated areas. Specifically, if beam end repairs are necessary, show the locations of beam ends in need of repair on the existing erection diagram from the as-built plans. This information will be presented in the Appendix of the scoping report. These documents are used by Lansing Bridge Design to prepare rehabilitation plans, and C & T Bridge Operations Unit to perform load rating analyses if requested.

Visually inspect the steel superstructure for any areas that may exhibit out of plane bending or distortion such as web to diaphragm or cross frame connections, lateral gusset plates to web connections, or connections of any other secondary members to beams. Note the existence of any fatigue prone details, or any welding in the tension zones that are transverse to the plane of stress. Inspect any pin and hanger assemblies for proper operation. Does the pin and hanger meet current standards? Note the condition of pin plates and if the ends are touching due to pin and hanger closure.

- (5) In other areas of heavy flaking rust, the CONSULTANT will clean as necessary to measure for any section loss. Thickness readings will be taken at the thinnest locations and recorded.
- (6) Note the condition of all bearing devices. For steel bearings such as rocker bearings or pedestal bearings, inspect for pack rust, rocker alignment, section loss and paint condition. For elastomeric bearings, check for excessive bulging of the sides (greater than 15% of bearing thickness), shear deformation due to thermal movement, splitting and tearing, and discoloration from exposure to light.
- (7) For timber structures visually inspect for checks (separations of the wood fibers parallel to the grain direction) knots and splits which are natural defects that may provide openings for decay and begin to reduce the strength of the members. Inspect for fungus, insect damage or any other effects of nature. Inspect for in-service defects such as fire damage, vehicular collision, abrasion or mechanical wear, overload distress, excessive deflection of flexural members, weathering or warping and chemical damage. Perform a pick or penetration test at various locations, which involves lifting a small sliver of wood with a pick or pocket knife, and observing whether or not it splinters or breaks abruptly. Sound

wood splinters, while decayed wood breaks abruptly.

Inspect areas near the support to check for horizontal shear cracks which appear along the grain of the member. Inspect bearing areas for crushing due to decay. Note the condition of fasteners and connections.

- (8) The vertical clearance of the bridge must be field verified and noted in the executive summary and stated in the report. A picture of any vertical clearance sign attached to the bridge must be taken. See the MDOT Bridge Design Manual, Volume 5, Section 7.01.08 for minimum vertical clearance requirements. For structures not meeting minimum vertical underclearance criteria, raising the structure to meet current standards must be considered in selecting the repair option. Any option including a deck replacement, superstructure replacement or bridge replacement must meet the minimum vertical underclearance requirement as it is very difficult to obtain a design exception. The cost of raising the grade of the bridge to obtain acceptable underclearance must take into account additional approach work.
- (9) The width of the structure must be evaluated to determine whether it is functionally obsolete. If widening is necessary to upgrade the structure to current standards, or for maintaining traffic during construction, this must be stated in the report. Please refer to the MDOT Bridge Design Guides, Section 6.05 for acceptable bridge deck cross sections. This will include possible widening to meet current standards for radii. The CONSULTANT will describe how and where the widening is to take place and provide a plan view sketch showing the proposed widening. Specify if widening can be done within the deck overhang, or if additional beam lines and substructure width will be needed to accommodate the required deck cross section. Widening may also require additional approach work to transition between the roadway width and the new bridge width.
- (10) The CONSULTANT must determine if part-width construction is possible or if the entire crossing must be closed and a detour used. Final detailed traffic control costs for construction will be determined by MDOT.
- (11) Any work required for the approaches must be included in the report and these items accounted for

on the Estimate Sheet.

- (12) The CONSULTANT must prepare a formal letter informing the local government agency of the proposed work and to determine their future needs at each structure (Attachment No. 11).
- b. The area immediately around the structure must be closely evaluated to determine if there are any site issues or constraints that may have an impact during construction. Each quadrant of the structure is to be evaluated and photo-documented. These include items such as:
- (1) Businesses or driveways close to the approaches.
 - (2) Utilities attached to or near the bridge.
 - (3) Signs or sign brackets attached to the bridge. Specify if the connections are bolted or welded.
 - (4) MITS message boards.
 - (5) Poor alignment or geometrics.
 - (6) Approach and departure guardrail terminals or the presence of impact attenuators.
 - (7) Bank erosion or scour. Unusual channel features.
 - (8) Railroad tracks that have been removed from over or under the bridge.
 - (9) Proximity of other bridge structures.
 - (10) Is drainage sufficient? Any evidence of ponding on the structure?
 - (11) Is Right-of-Way limited and might additional ROW or easements be required?
 - (12) ITS components, such as cameras, changeable message signs, conduit, and other ITS elements.
- c. Additionally the following items are some of the items that, if apply, must be evaluated and costs considered:
- (1) Is the bridge historical? (MDOT PM to provide information if applicable)
 - (2) Does this bridge have special structural design features which may affect the repair options such as lack of load path redundancy, fracture critical members, category E' allowable fatigue stress details, etc? (See AASHTO Standard Specification for Highway Bridges, 17th edition, Section 10.3, tables 10.3.1A, 10.3.1B and 10.3.1C for descriptions and illustrative examples.)
 - (3) Is the minimum vertical underclearance deficient?
 - (4) Is the structure functionally obsolete? Will widening be required as part of rehabilitation effort?
 - (5) If it is a turn-around structure, or has a turn around on it, do the radii meet current standards? Is widening of the bridge required to meet current radii

- standards?
- (6) Are there environmental issues that may impact the project?
 - (7) If it is a pedestrian structure, do the geometrics meet current ADA criteria? If not, consider what repair options would be necessary to meet the minimum criteria set by the ADA.

If, during the site review, the **CONSULTANT** finds any structural condition that may cause the bridge to be load restricted (such as holes in beams, broken prestressing strands, etc.), or which may require other immediate action (such as lane closures or emergency repairs to holes in the deck, temporary supports, false decking due to spalled concrete, etc.), the **CONSULTANT** will notify the MDOT PM as soon as possible. The **CONSULTANT** will be provided with a list of contact information of key personnel within MDOT in the event that the MDOT PM is unavailable. The **CONSULTANT** will provide documentation of the condition (such as beam measurements, pictures taken, etc.) to MDOT as quickly as possible.

2. Determining Repair Options

Each bridge will be evaluated to determine the most appropriate repair option based on the physical condition of the bridge, economic considerations, and sound engineering judgment.

The following are the types of repair options that are to be considered:

- a. "Hold", or Defer work three to five years
- b. Deck patching and selective repairs
- c. Overlay
 - 1. Epoxy overlay
 - 2. Concrete overlay (Deep or Shallow)
 - 3. HMA overlay with waterproofing membrane
- d. Deck replacement
- e. Superstructure replacement
- f. Bridge removal or replacement

The Bridge Deck Preservation Repair Matrix (Attachment No. 1) must be consulted for reasonable deck repair options based on the condition of the deck surface and underside. This is to be used as a guide, and shall not substitute for sound engineering judgment. See **ENGINEERING ANALYSIS** for more discussion about the option choices.

3. Photographs

Photo-documentation of the bridge and the surrounding areas must be included in the report. All of the pictures must be mounted on 8½" X 11" media and are to be captioned with a description of what the picture is intended to show. Each copy of the bridge report must have this series of pictures showing at least the following items and sequenced in the following

order:

- a. Elevation views of both sides of the bridge
- b. Deck surface (entire deck surface to be photographed, including joints)
- c. Railing, sidewalks, brush blocks, raised shoulders or any other feature of the deck surface
- d. Approaches
- e. Underside of deck (to sufficiently document condition)
- f. Typical superstructure elements (beams, diaphragms, cross bracing, lateral bracing, bearings, pin and hangers, etc.)
- g. Abutments, including wingwalls and slope protection
- h. Piers showing all faces
- i. Waterways / railroad tracks
- j. Major deteriorated areas
- k. Load posting signs
- l. Vertical clearance signs
- m. Utilities
- n. Quadrant photos, showing businesses or other items that could affect the cost of the construction, including ITS components

In addition, pictures must be taken which will support the CONSULTANT's repair recommendations. All pictures must be captioned to describe the general view (such as north elevation, etc.) and to describe the pertinent item or deterioration. The deck surface photos will be an "aerial view" taken from a height of at least 12 ft above the surface of the deck. These photos will be taken after the deck delamination survey and the areas of delamination are expected to show clearly in the photo.

4. Testing

During the site review phase, the CONSULTANT may determine that material testing is desirable to better understand the condition of the deck and therefore make a better judgment on the best repair option. Advance approval of the MDOT PM is required prior to initiating any testing.

If the CONSULTANT PM determines that material testing is needed, a testing proposal must be submitted to the MDOT PM for approval. The testing proposal will show the bridges for which testing is to be performed, what tests are to be performed, what specific information is to be gained from the testing, how this information is to be used, and the cost of testing and necessary traffic control. Proposals submitted with insufficient justification for testing will be denied. Where the deck is beyond saving, as judged by visual indications, or where the appropriate repair option is clearly indicated, material testing will not be performed.

The results and analysis of any testing that is approved and performed will be discussed in the Site Review Findings section of the report and the actual test reports will be included in the Appendix.

B. ENGINEERING ANALYSIS

The engineering analysis phase will include an evaluation of the site review findings, the preparation of and evaluation of a minimum of three repair strategies, including the preparation of cost estimates, and finally the selection of the best repair option.

For the superstructure replacement and bridge replacement options, the CONSULTANT will also address eliminating or correcting undesirable or deficient design characteristics (e.g., structural capacity, minimum underclearance, widening, etc.). Analysis of the load carrying capacity of the bridge will not be required.

1. Estimating Various Repair Options

Cost estimates for each of the Repair options will be prepared for each structure. A standard form Estimate Sheet with unit prices will be used (Attachment No. 3, Bridge Cost Estimate Sheet). The Estimate Sheet, on 8½" x 11" paper, provides spaces to show all of the repairs to be performed for that call for projects year. Calculations for the paint area will be prepared by the CONSULTANT and included in the Appendix of the report.

A line item shall be provided on the Cost Estimate for "bridge aesthetics" in the amount of 1% of the construction estimate (before mobilization, or inflation are figured in).

The estimates required are "early preliminary estimates" and not the more detailed "engineering estimates." The object is to determine the most economical method of treatment and to establish the budget. The more detailed estimates will be determined in the design phase (not a part of this authorization).

If additional information is necessary for a unit price not on the list, contact the MDOT PM or Linda Reed, Bridge Scoping Engineer in Construction and Technology at (517) 322-5622. Questions regarding scour are to be directed to Kristen Schuster in Design Hydraulics Unit at (517) 335-1919.

C. REPORT

The deliverables for this authorization will be the scoping reports, photographs and all electronic files. The electronic files shall be submitted for all files used in the report on CD-ROM compact disk. All digital pictures shall be in JPEG or other format, as approved by the MDOT PM. All electronic files shall have filenames that are obvious as to what they contain, or a legend text file shall be on the CD-ROM for each structure. The legend file shall identify all of the filenames and what their contents are. There shall be a separate directory, from the root directory on the CD-ROM, identified by MDOT Structure Number, for each structure. The CD-ROM shall have the Consultant's name, Job Number, and MDOT Structure list on the label.

For each scoping project, a three-ring binder containing the scoping reports as described below will be submitted. The binder will contain all information pertaining

to the site review findings, and recommendations for each bridge. Three sets of each binder will be submitted, first in draft form, then revised as necessary and submitted in final form.

The Report will be submitted in two phases: draft version and final version. The draft report will be a complete report, with 3 copies submitted to the MDOT PM. These will be reviewed by the Region Bridge Engineer, Lansing Bridge Design, and the Bridge Scoping Engineer. Comments and questions arising from those reviews will be given to the Consultant to be incorporated into the final report if appropriate or addressed separately and submitted with the final report. Draft version copies will NOT be returned to the CONSULTANT unless prior arrangements have been made with the MDOT PM. All photos will be returned to the CONSULTANT to be reused in the final report.

Incomplete final reports or reports with errors will be returned to the Consultant for revision. Failure to make the required changes will be considered a failure to meet the terms of the scope of work.

1. Part 1

Part 1 of the binder is intended to eliminate repetition of information common to each bridge. Each section will be divided by tabs showing the section name. Each page in this section shall contain a footer with the CONSULTANT's name and date in the lower right hand corner

a. Table of Contents

b. General Site review Procedures

This section will summarize the general procedures used during the site reviews. This information will include a table showing the site review dates for each bridge, typical equipment used, typical traffic control procedures, typical site review procedures, etc. Any significant variations from this typical information can be stated under the **Field Site Review Findings** section for a specific bridge.

2. Part 2

Following the general information (above in **Part 1**) will be a section for each structure in the work package containing the information specific to each structure. Each section will be divided by tabs showing the structure number. Each page in this section shall contain a footer with the CONSULTANT's name and date in the lower right hand corner.

a. Executive Summary

This is to include a statement of the recommended treatment for the bridge and the cost (in 2009 dollars) of the initial repair. The Executive Summary will be a "stand alone" section and will not refer to other sections of the report, nor will the main text refer to information in the executive summary.

The information to be included in the executive summary shall be as stated follows:

- (1) Recommended repair option, and cost in 2009 dollars
- (2) The general condition, and current NBI ratings for item 58A (deck surface), item 58 (deck), item 59 (superstructure), and item 60 (substructure) from the Bridge Safety Inspection Report.
- (3) The percent deficiencies of the deck surface, deck underside and substructure units. State if recommended repair option is consistent with the Bridge Deck Preservation Repair Matrix and justification as to why or why not.
- (4) Eligibility for FHWA funding and current sufficiency rating. State whether structure is on or off the National Highway System (MDOT PM to provide this information).
- (5) The measured existing vertical underclearance, and any utilities on the structure. State the Region or TSC contact personnel for utility and maintenance of traffic issues (MDOT PM to provide this information).

b. Field Site Review Findings:

This section will include, as a minimum, discussion of the following areas:

- (1) Overall assessment of the condition of the bridge including an evaluation of the beam end thicknesses (webs and bottom flanges) taken during the site review. Reference to current NBI ratings for items 58A, 58, 59, & 60. State percent deck surface and underside deficiencies.
- (2) Sketches of beam end repair areas, all substructure elements showing repair areas for all faces, and typical deck sections for widening options.
- (3) Site issues, i.e., geometrics, vertical clearance, maintenance of traffic, utilities, scour, etc. In case of the situation where no site issues that would impact the rehabilitation of the structure were identified, a statement will be made that all areas were investigated and no issues were found.
- (4) Testing results and implications to the repair options. If no testing was performed, this will be stated in the report.

- (5) The following outline may be used for a consistent presentation format for the body of this section of the report:
- (a) Approaches (approach slab and sleeper slab if applicable)
 - (b) Deck (surface, underside, joints, sidewalk, brush block, railing)
 - (c) Superstructure (beams, diaphragms, cross frames, paint system, bearings, pin and hangar)
 - (d) Substructure (abutments, backwalls, wingwalls, piers, slope protection, scour)
 - (e) Site Issues
 1. Maintaining Traffic
 2. Geometrics
 3. Vertical Clearance
 4. Signs
 5. Utilities
 6. Channel condition
 7. ITS Components
 - (f) Material Testing

c. Rehabilitation Options:

This section will include a discussion of the rehabilitation options, as described in **Determining Repair Options** and **ENGINEERING ANALYSIS**. For each option evaluated, a discussion of the necessary improvements and the associated costs will be included. The report must discuss and state the reasoning and judgment for selection of the recommended option. This discussion will also include the reasoning for the elimination of all other options, as appropriate.

Reference to the Bridge Deck Preservation Repair Matrix is to be made, and justification as to agreement or disagreement with the rehabilitation option outlined by it will be made.

d. Summary with Repair Recommendation:

This section will state the recommended rehabilitation for the structure and the factors used in determining this recommendation. This section will also briefly discuss the effects of postponing the recommended improvements.

This section will also include a description of any ITS components that are or may be impacted by the rehabilitation of the structure. The description should also include a preliminary quantity estimate and opinion of probable cost for the replacement, relocation or rehabilitation of those elements. The cost estimate is to be included

as part of the overall estimate for the structure rehabilitation.

e. Appendix:

- (1) Mounted photos with descriptions
- (2) Estimate Sheets
- (3) Field notes and sketches
- (4) Paint calculations
- (5) Detailed Beam Survey Report
- (6) Beam Diagram
- (7) Lab test reports (if applicable)

VI. VENDOR PAYMENT

1. Method of Payment

Payment to the CONSULTANT will be Lump Sum with Milestone Payments. (The basis of payment will still be figured by actual cost plus a fixed fee.)

2. Milestone Payments Schedule

All field work is complete on all structures	40%
Draft report review is complete	40%
Final deliverables complete and accepted	20%

All invoices/bills for services must be directed to the Department and follow the 'then current' guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's Bulletin Board System. This document contains instructions and forms that must be followed and used for invoicing/ billing; payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for Services rendered shall not exceed the "Cost Plus Fixed Fee Not to Exceed Maximum Amount" unless an increase is approved in accordance with the contract with the Consultant. All invoices/bills must be submitted within 14 calendar days of the last date of services being performed for that invoice.

Direct expenses will not be paid in excess of that allowed by the Department for its own employees. Supporting documentation must be submitted, with the invoice/bill, for all billable expenses on the Project. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this Project. Hours spent in administrative, clerical, or accounting roles for billing and support, are not considered allowable hours; there will be no reimbursement for these hours.

Reimbursement for overtime hours will be limited to time spent on this project in excess of forty hours per person per Sunday through Saturday week. Any

variations to this rule should be included in the priced proposal submitted by the Consultant and must have prior approval by the MDOT Project Manager.

V. TRAFFIC CONTROL

A. TRAFFIC CONTROL & PERMITS DURING SITE REVIEW

The traffic control during the site review will be the responsibility of the CONSULTANT. Permits for the traffic control and for working in the MDOT right-of-way must be obtained from the MDOT TSC in which county the bridges are located, prior the start of work. On the permit application, please indicate the Control Section and Job Number. Allow ample time for permit issuance. The CONSULTANT must follow all requirements as issued with the Permit from the MDOT TSC.

Nighttime lane closures for deck inspection may be allowed at the discretion of the MDOT PM. Approval for nighttime work must be obtained prior to the start of work.

B. RAILROAD FLAGGING & PERMITS

If it is necessary to work over an active railroad during the site review phase, the CONSULTANT will be responsible for obtaining the necessary permits and flagmen. Costs for this will be considered an expense and must be detailed in the traffic control section in the proposal and on the invoice.

VI. GENERAL

A. SOFTWARE REQUIREMENTS

The CONSULTANT is required to own and use Microsoft Excel version 2002 or later for all spreadsheets and Microsoft Word version 2002 or later for word processing. The requested electronic files (see Section V-C, **REPORT**) must be submitted in these applications. Electronic file templates for all of the attachments can be provided via E-mail, from the MDOT Bulletin Board, or on a diskette in these applications. Contact the MDOT PM with your E-mail address or request a diskette.

B. EQUIPMENT AND SAFETY

The CONSULTANT will be responsible for obtaining and operating the high reach equipment for inspection under the bridge. However, MDOT will provide an under bridge inspection crane for the CONSULTANT's use in certain situations, for example, high river and railroad crossings. The CONSULTANT will still be responsible for traffic control and for scheduling. Contact the MDOT PM a minimum of 14 days in advance for scheduling use of the equipment.

During the inspection, the CONSULTANT is responsible for traffic control and all aspects of personal safety of his or her staff. Traffic control will follow standard MDOT procedures. The CONSULTANT will be responsible for obtaining all permits and notifying the Region Engineer in writing (with a copy to the MDOT PM) of the time and location of the work.

All other inspection equipment and personal safety equipment such as hard hat, steel toed shoes, reflective vest, and eye protection will be responsibility of the CONSULTANT.

C. OTHER

No diving of river crossings is expected as part of this work. However, if it does become necessary, it will be dealt with under a separate authorization.

VII. APPENDICES

- A. Attachment No. 1. Work Package Listing and Location Map
- B. Attachment No. 2. Bridge Deck Preservation Repair Matrix
- C. Attachment No. 3. Steel Beam Section Loss Detail
- D. Attachment No. 4. Bridge Cost Estimate Worksheet
- E. Attachment No. 5. Letter To Local Agency

WORK PACKAGE LISTING AND LOCATION MAP

WORK PACKAGE 1, JN 83124

	Bridge No.	Location	County
	STRUCTURE	LOCATION	
1	P01 of 63041	Ped O Pass over Huron M-59	Oakland
2	P02 of 63041	Ped O Pass over Huron M-59	Oakland
3	X01 of 63043	GTW RR M-59	Oakland
4	S24 of 63102	I-696 WB Serv Woodward Ave	Oakland
5	S26 of 63102	I-696 EB Serv Woodward	Oakland
6	S27 of 63102	NB Woodward I-696	Oakland
7	S28 of 63102	Main Street I-696	Oakland
8	S04-1 of 63172	I-75 NB over Pontiac Rd	Oakland
9	S12 of 63174	Ramp Conn to I-75	Oakland
10	S02 of 77023	Allen Rd I-69	St. Clair
11	B05 of 77024	I-69 Eb Cox-Doty Drn	St. Clair
12	S01 of 77024	Martin Rd I-69	St. Clair
13	S02 of 77024	Capac Road I-69	St. Clair
14	S04 of 77024	Miller Rd I-69	St. Clair
15	B03 of 77111	I-94 Black River	St. Clair
16	S21 of 77111	I-94 under Water St.	St. Clair

Attachment No. 1

BRIDGE DECK PRESERVATION REPAIR MATRIX

CONDITION STATE					POTENTIAL RESULT TO NBI		
Deck Surface NBI # 58a	Deck Surface Deficiencies % (a)	Deck NBI # 58	Deck Underside Deficiencies % (b)	REPAIR OPTIONS (c)	Item # 58a Deck Surface Rating	Item # 58 Overall Deck Rating	Next Anticipated Evaluation
N/A	N/A	N/A	N/A	CSM Activities	No Change (d)	No Change (d)	1 to 8 years
NBI = 5, 6, 7	2% to 5%	NBI > 5	N/A	Deck Patch / Seal Cracks	Up by 1 pt.	No Change (d)	1 to 8 years
				Epoxy Overlay	NBI now 8, 9	No Change	10 to 15 years
		NBI ≤ 5	N/A	Deck Patch	Up by 1 pt.	No Change	1 to 8 years
				Hold	No Change	No Change	3 to 10 years
NBI = 5	5 % to 15%	N/A		Hold	No Change	No Change	3 to 10 years
				Deck Patch	Up by 1 pt.	No Change	1 to 8 years
NBI = 4 or 5	15% to 30%	NBI = 5, 6	< 10%	Deep Concrete Overlay	NBI now 8, 9	Up by 1 or 2 pts.	25 to 30 years
		NBI = 3 or 4	10% to 30%	Shallow Concrete Overlay	NBI now 8, 9	Up by 1 pt	10 to 15 years
		NBI = 2 or 3	> 30%	HMA Overlay with waterproofing membrane(e)	NBI now 8, 9	No Change	8 to 10 years
NBI = ≤ 4	>30%	NBI ≥ 5	< 5%	Deep Concrete Overlay	NBI now 8, 9	Up by 1 or 2 pts.	20 to 25 years
		NBI = 3, 4, or 5	5% to 30%	Shallow Concrete Overlay	NBI now 8, 9	Up by 1 pt	10 years
				HMA Overlay with waterproofing membrane(e)	NBI now 8, 9	No Change	5 to 7 years
		NBI = 2 or 3	> 30%	Replace Deck	NBI now 9	NBI now 9	40+ years
				HMA Cap (f)	NBI now 8, 9	No Change	1 to 3 years

a.) Percent of deck surface area that is spalled, delaminated, or patched with temporary patch material.

b.) Percent of deck underside area that is spalled, delaminated or map cracked.

c.) The "Hold" option implies that there is on going maintenance of filling potholes with cold patch and scaling of incipient spalls.

d.) Sustains the current condition longer.

e.) Hot Mix Asphalt overlay with waterproofing membrane. Deck patching required prior to placement of waterproofing membrane.

f.) Hot Mix Asphalt cap without waterproofing membrane for ride quality improvement. Deck must be replaced in 1 to 3 years and be in the 5 year plan.

Attachment No. 2

August 15, 2003 Rev.

Date

Address

To Whom It May Concern:

YOUR COMPANY'S NAME is under contract to provide the Michigan Department of Transportation (MDOT) with Bridge Project Scoping services. The purpose of this contract is to inspect selected bridges which have been identified as candidate bridge projects, determine repair options and cost estimates for repairing the structures. The structures will be repaired to an extent determined by the bridge scoping process and to meet MDOT's current standards if applicable.

As a local agency (city, county, township or village) likely to be affected by the repairs to the structures, we are contacting you to inform you of the future work to the structures and to collect specific future local needs (if any) for the structures. Please be advised that any items identified as future local needs will become the financial responsibility of the requesting local agency. The future local needs specified by the local agencies will be logged and included in the final estimates and reports created by our firm. As an example, MDOT seeks input regarding any non-motorized access needs which you have for any of the applicable structures listed.

Attached is a list of structures that are included in this contract.

Please respond in writing with any future needs to any of the listed structures by PROPOSED DATE. Please send all responses to:

YOUR COMPANY'S NAME, ADDRESS & PHONE NUMBER

YOUR COMPANY'S EMAIL ADDRESS

Any responses received after this date will not be included in the repair options scheduled to be performed by MDOT.

Sincerely,